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veto, and they yielded in an effort to avoid that confrontation.

We need a farm bill because American farmers need one, and they need it quickly. They need it now. If we must give up a part of what we consider necessary in order to get a timely bill, and one that will encourage presidential approval and prompt signature, then it is prudent to accept these changes, and I urge that the Senate accept them.

I respectfully urge that the President give this bill his signature. He will no doubt receive a variety of advice on this subject from within the executive branch. I submit that there is essentially no difference in principle between this bill and the Agriculture Act of 1973, which received such enthusiastic support from the administration at the time it was proposed and passed.

There are differences, but they are only in degree, and differences in degree are simply quantitative judgments, not fundamental policy disagreements. The figures in this legislation are based on careful evaluation of facts established in hearings. The Congress accepts them, I believe, as accurate within the limitations of any predictions that are subject to the vagaries of the weather in the coming crop season. I urge that the President accept them.

A farmer who plants a crop this spring is going to know pretty closely what it is going to cost him per acre to raise and harvest that crop. He will also know roughly what the yield per acre will be in bushels, or pounds, provided he is blessed with average weather.

What he will not know is what price he will get per bushel, or per pound, for that crop. All he can do is look at the current prices in the commodity market and guess at what they may be when he harvests. Based on costs, which he knows, and receipts, which he has to guess at, he chooses what crop he will plant and how much. If he guesses wrong 2 years in a row he is very apt to be out of business.

A man in any other kind of business sets his selling price based on his production costs. The farmer cannot. He must take what the market will give him. That market price can and does fluctuate greatly, often from causes that occur elsewhere in the world. Unless a degree of stability is provided for prices, in relation to current costs, through realistic Government-sponsored target prices, then there is no way the farmer can pass through to the consumer his increases in costs.

Agriculture is a heavy user of petroleum products, and this has of course been a major reason for greatly increased costs. Other users of petroleum, utilities for example, have the full capability to pass through to consumers these increased costs, and do so with the Government's approval. How can farmers pass these costs through without target prices that realistically reflect their increased costs of petroleum?

Last year we had floods and droughts and early frosts, but in spite of that our exports of farm products produced revenues of \$22 billion. This went a long way toward paying the bill for all the oil the

Nation imported. Are we to deny the farmer a just payment for that part of the imported oil that he uses to raise these crops for export?

Mr. President, these loan levels and target prices are the only way we can expect to have reasonable stability in the prices of farm commodities. Without price stability there will not be production stability. Production levels would gyrate from feast to famine, and the one ruins the farmers while the other hurts the public. Both are bad for our export trade.

I wish there were better general public recognition of the critical situation the farming business is in today. Right now, and if this bill is not signed into law, it will mean that many of them will have a choice of producing at a probable loss, or not producing. And those who produce and suffer a loss probably will not be able to produce next year. It is a poor choice. If the President will sign this bill they will not have to make that choice, and I hope this will be the case. I respectfully and strongly urge that the President sign this farm bill into law.

Mr. HUGH SCOTT. Mr. President, at the request of the administration, I ask unanimous consent that a fact sheet on the farm bill be inserted at this point in the Record.

There being no objection, the material was ordered to be printed in the Record, as follows:

#### FARM BILL BACKGROUND

Under the current farm program producers of wheat, feed grains and cotton are eligible for Federal support in three ways:

They may borrow funds at 61/8% interest with these commodities as collateral. If they desire they may forfeit this collateral in lieu of repaying the loan;

If market prices over a specified period of time average below the "target" price producers will receive a payment equal to the difference. These target prices are established in law; and

If a producer because of a natural disaster is unable to harvest a normal crop, he is eligible for a payment equal to 1/2 of the target price.

Up until the 1975 crop soybean producers were eligible for price support loans. Dairy products are supported by purchases from processors at prices which enable the processors to pay milk producers a specified price, currently \$7.24/cwt.

#### PROVISIONS

HR 4296 would increase loan and target prices for the 1975 crops as follows:

Wheat: Loan, from \$1.37 to \$2.50; target, from \$2.05 to \$3.10.

Corn: Loan, from \$1.10 to \$1.87; target, from \$1.38 to \$2.25.

Cotton: Loan, from \$0.34 to \$0.38; target, from \$0.38 to \$0.45.

Soybeans: Loan, from \$00.00 to \$3.94.

In addition it would establish dairy price supports at 80% of parity and adjust them quarterly by the changes in the index of prices paid by farmers for production items, including interest, taxes and wage rates.

#### IMPACT ON BUDGET OUTLAYS (TAXPAYERS)

Budget outlays in 1971 would be increased by \$1.8 billion.

Of this amount \$500 million would be in the form of direct payments. Over \$300 million would go to cotton producers because cotton prices are already below the current target price.

Loans to producers would increase by

about \$1.3 billion largely because of the increase in the loan rate and the attractive interest rate. Most of these loans would eventually be repaid unless market prices fell to these levels. (This could easily happen with respect to cotton since the bill encourages a shift from soybean to cotton production.)

There would be some increase, about \$30 million, in dairy purchases.

#### IMPACT ON FARMERS AND CONSUMERS

Since it is politically inconceivable that loan and target prices would be lowered next year, the bill's impact on farmers and consumers must be measured in terms of longer than its alleged one-year life.

#### FOR FARMERS

In order to avoid the huge cost of this bill—an open ended drain on the Treasury—the Department of Agriculture will need to reimpose the same kind of production controls used in the 1960's.

#### FOR CONSUMERS

The higher market prices resulting from these production controls will undoubtedly raise the price of bread, meat, cotton goods, etc., resulting in substantial costs to consumers.

Mr. HUMPHREY. Mr. President, I wish to lend my support to the 1-year emergency farm bill which is before us today.

The House and Senate Committees on Agriculture and Forestry, in developing this legislation, have attempted to take a responsible stance which would be beneficial both to our farmers and to our consumers. We have held hearings and the near unanimous conclusion of the witnesses was that the sharply increased costs of production necessitate action to give greater protection to our farmers.

At the same time, increasing the target prices and loan levels is in the interest of our consumers as well. We cannot expect our farmers to continue to produce and at the same time risk substantial losses if we have bumper crops.

The administration has refused to face these basic facts. They have put out misleading and highly inflated estimates as to what the cost of this legislation would be. We know from past experience that these figures are not reliable, and even now the Department has begun to revise its cost estimates.

The question which the administration has refused to face is what is the cost of doing nothing? How many more bankruptcies on the part of our farmers do we need to convince the Department that a roller coaster agricultural situation is not in the interests of our farmers or our consumers?

Last year over 3,000 Minnesota dairy farmers were forced out of production. Does the Department of Agriculture want another such year for our dairy farmers?

The administration continues to operate on an outdated and irrelevant notion of a "free market system" which does not speak to the conditions of today's agricultural markets. Our farmers continue to face ever escalating production costs and input prices which are often administratively established. And yet, the produce which they sell continues to drop in the face of the worldwide recession.

The question which we face is whether

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the administration will act responsibly? Congress has attempted to fashion a bill which responds to the needs of our consumers and farmers on a 1 year basis. This measure should be adopted and implemented, and we can then attempt to develop broader and longer term legislation which will address other areas not included in this bill.

But we do need to approve this bill. Our farmers need an increased level of protection since the Government has called upon them to go all out in producing. At the same time, our consumers are hoping that we will have abundant food supplies this year. Our farmers are rightly concerned, and in many cases they are considering cutting back their production if the Government refuses to act constructively and responsibly.

We should not be deceived by the USDA that this bill will encourage the production of crops for Government warehouses. That is nonsense. The object of this legislation is a rather simple one. It is to provide an improved safety net or floor so that our farm prices will not go to disastrously low levels in case we have good weather and bumper crops.

We also all know that should this happen and if more of our farmers be driven out of production, our consumers will not be the beneficiaries. In most cases where farm prices drop, and even sharply, consumer prices drop only marginally.

The Department of Agriculture has not been willing to discuss the facts of this bill candidly and openly. Our urban citizens should not be deceived by the stories which have been offered. I hope that the President will not rely solely on the word of the USDA and the Office of Management and Budget as to what this bill would do or what it would cost.

I hope that the President will take a broader view of the needs of our farmers and consumers in approving this legislation.

The PRESIDING OFFICER. The question is on agreeing to the conference report.

The conference report was agreed to

## ORDER OF BUSINESS

Mr. ROBERT C. BYRD. Mr. President, will the distinguished Senator from Florida yield me 2 minutes out of his time?

Mr. STONE. I yield.

Mr. ROBERT C. BYRD. I ask unanimous consent that the 2 minutes I am borrowing from the Senator be restored to him out of my own time.

The PRESIDING OFFICER. Without objection, it is so ordered.

## NOT-SO-VEILED BLAME-PLACING

Mr. ROBERT C. BYRD. Mr. President, the administration's attempts to blame Congress for the tragic situation in Indochina have increased in the past 2 days, with both the President and the Vice President making statements that can only be described as irresponsible at best.

Let us look at the Vice President comments first. Mr. ROCKEFELLER was quoted in the Washington Post yesterday as saying:

Let's say 2,000 Americans or 3,000, half of them are killed, half of them are taken captive. That raises a lot of issues.

And he suggested strongly that the American people will hold Congress accountable for the safety of the Americans still in South Vietnam.

I find that statement to be deplorable, improper, irresponsible, indiscrete, and unfortunate. There are many brave Americans performing important functions in South Vietnam, and it is unconscionable for the Vice President of the United States to use them—to speculate on their possible fates—to try to make a questionable political gain.

Talk about panic. What must run through the minds of Americans in South Vietnam when they read that their Vice President is holding out the possibility that half of them might be killed and the other half captured? And what must they think when they read that the Vice President's main concern does not seem to be their safe evacuation, but rather appears to be who will be blamed if they are not brought home safely?

I have considerable personal admiration and affection for the Vice President, and voted for his nomination after several hours of close questioning when he came before the Senate Rules Committee. Thus, I am particularly disappointed by his intemperate remarks, and hope that any future thoughts he may have along those lines will be left unsaid.

In the Washington Post of today, the President is quoted as continuing his policy of publicly stating he will not engage in blame-placing—while at the same time increasing his not-so-veiled attempts to lay the blame for the human tragedy in Indochina on Congress doorsteps. The essence of the President's remarks was that the Soviet Union and the Peoples Republic of China are not to be blamed—the United States is to be blamed; that the Soviet Union and the Peoples Republic of China cannot be held responsible, but that the United States is to be held responsible. Of course, the implication is that Congress, being the elected representatives of the people, is really to blame.

The President, in his recent state of the world address, said that "détente is a two-way street." We would all like to think so. But one way to find out for sure, one way to find out how much the Russians truly value détente is to try to enlist their aid to bring an end to the killing in Indochina. They want our wheat. They want our computer technology—and I am against our letting them have it. They want, they want, they want. What are they willing to give? Are they willing to give their influence to stop the fighting, to alleviate the suffering, to bring about a settlement in Vietnam? Or do they have a one-way marker on their street of détente?

In any event, the President and the Vice President ought to be as concerned about détente with Congress as the President is with the Soviet Union. And the best way for him—and the Vice President—to show such concern is to follow the President's publicly stated policy and call an immediate halt to the gutter poli-

tics of constant and unjustified blame-placing. Nothing can be gained by such tactics. Blaming Congress is a phony issue. The American people know it is a phony issue, and it simply will not wash. But such tactics, if they continue to be pursued as vigorously as they have been up to now, can only be counterproductive and can only diminish prospects for a reasonable, constructive, effective bipartisan foreign policy and can result in much being lost in the future.

I thank the Senator.

Mr. President, I further ask unanimous consent that my remaining time, after the time that I have taken has been given back to Mr. STONE, be allotted to Mr. TUNNEY.

The PRESIDING OFFICER. Without objection, it is so ordered.

## SENATE RESOLUTION 131—SUBMISSION OF A RESOLUTION RELATING TO SANCTIONS AGAINST CUBA

(Referred to the Committee on Foreign Relations.)

Mr. STONE (for himself, Mr. TALMADGE, Mr. ALLEN, and Mr. HELMS) submitted the following resolution:

S. RES. 131

Whereas the State Department has announced that the Secretary of State shortly will visit South America, and

Whereas the Secretary of State has said that one of the purposes of the trip will be to explore ways to end the 11-year embargo of Cuba by the Organization of American States, and

Whereas it is expected that proposals will be introduced at the OAS meeting in Washington during May which would enable the OAS to end the embargo through a simple majority rather than a two-thirds vote, and

Whereas the Secretary of State has said that once the embargo is lifted, the United States will seek to normalize relations with Cuba, and

Whereas the Castro Regime in Cuba has imprisoned and continues to imprison political prisoners in large numbers, has sought and still seeks to train insurgents and to promote insurgency in this hemisphere by violent means, has seized and refused compensation for more than one and a half billion dollars in American-owned properties, has refused to permit inspection of forced labor camps and political prisons by the International Red Cross or bodies of jurists or other impartial agencies has permitted and continues to permit the use of its ports for the deployment of nuclear submarines and its land for military purposes by the Soviet Union, has insulted and continues to insult the United States of America on every available occasion taking even the occasion of a visit by two members of the United States Senate to issue a diatribe against the United States, and

Whereas in the face of all of the foregoing, any lifting of the punitive action by the OAS assisted directly or indirectly by the foreign policy of the United States would demean the United States and reward the above-described and other hostile acts and would further damage the already-eroding prestige and reputation of the United States in the crucial matter of the self-defense of American interests by the United States without measurable commensurate benefits for our country: Now, therefore, be it

Resolved, That it is the sense of the Senate of the United States that the foreign policy of the United States should not be

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employed to assist directly or indirectly, multilaterally or bilaterally, the lifting of sanctions against the Castro Regime in Cuba or its recognition by the United States or the other states of this hemisphere; and be it further

Resolved, That inasmuch as the present foreign policy of the United States is clearly to maintain such sanctions and not to recognize the current Cuban Regime that any change therein should be submitted to the Senate of the United States for its advice and consent and should not be accomplished indirectly without resort to such advice and consent.

Mr. STONE. Mr. President, I send to the desk a resolution submitted by the junior Senator from Florida, the senior Senator from Georgia, the junior Senator from Alabama, and the senior Senator from North Carolina. I offer it with respect to the impending change in policy by our State Department regarding Castro's Cuba.

Several days ago, Mr. President, it was announced and reported that our Secretary of State plans to leave shortly on a 5-day South American trip, and I quote the Associated Press article in which it is reported that Dr. Kissinger has said that,

One of the purposes of the trip will be to explore ways to end the 11-year embargo of Cuba by the Organization of American States.

Further reporting that Kissinger has said the United States will seek to normalize the relations with Cuba once the embargo is lifted.

Mr. President, the remarks just made by the distinguished assistant majority leader, which so clearly and logically describe the vacuum present in a policy of détente made up of one-way concessions, apply to the situation involved in the change of policy toward Castro's Cuba.

If unilateral relaxation of violence produces no major or substantial concessions in return, what is in it for us, the United States? What is the situation at this time within Communist Cuba compared with the situation when the Organization of American States and this Nation chose to impose sanctions, trade embargoes, withdrawal of recognition, and the like against that country's regime?

At the time the sanctions were imposed, Castro's Cuba was in the habit of imprisoning people for political reasons. The Cubans were in the habit of confiscating foreign investment, including American investment.

They were in the habit of requiring forced agricultural and other labor of people by compulsion. They were in the habit of yielding not merely to civilian advice from the Soviet Union, but to military leadership, military hardware, and all types of logistics in association with the Soviet Union. They were in the habit of financing, training, and fomenting insurgency by violence in the nations of this hemisphere, including our own. They were in the habit of inviting activist types to come and ostensibly cut cane, but instead using those young Americans, whether by dupe or by design, as a recruitment basis for insurgencies both in this country and elsewhere.

They were in that habit. And as a result of that habitual conduct of hostility toward not only our Nation but the entire hemisphere, the nations of this hemisphere decided that sanctions were the very least that that type of conduct merited.

What is the situation today?

Castro's Cuba is in the habit today of imprisoning people for political conduct. It has expanded, intensified, and perfected its system of block captain—I think they call them Committees of the Revolution or something such as that—but what they are is supervisors on each block and in each neighborhood of the private conduct of people, to the point where Cuba is probably the most tightly supervised and controlled communist society in the entire world, 90 miles off our shores.

They are in the habit of recruiting forced agricultural and other labor. They are in the habit today of assisting, permitting, and welcoming Soviet nuclear submarines, not on an isolated rare basis but on a periodic basis. They foster and maintain a forward naval facility to maintain those Soviet nuclear submarines and naval surface ships. They are in the habit of housing not dozens, not hundreds, but probably thousands of Soviet military personnel and providing, as they do, a very distinctly possible military and air base for action as well as, without any question or doubt, Soviet naval capabilities—right there 90 miles off our shores.

They are in the habit of rejecting all attempts to permit inspection of their prisons, their forced labor camps, their political detention facilities, by the International Red Cross or any other judicial or impartial international group. Why is that? Is it possibly because the conditions imposed on people are so brutal that they are afraid to have the world's public opinion know how they treat their own people who differ with them politically?

For years they have invited and trained groups of Americans called the Venceremos Brigade. The Internal Security Subcommittee yesterday issued a report, and I ask unanimous consent that at this point in my remarks pages 11 through 17 of that report, starting with the letter B, The Venceremos Brigade, be printed in the RECORD.

There being no objection, the excerpt from the report was ordered to be printed in the RECORD, as follows:

#### THE VENCEREMOS BRIGADE

The continuing investigation of the Communist Threat to the United States through the Caribbean brought to light a facet of activity involving United States and foreign nationals which may affect the internal security of the United States for many years to come.

Specifically, it dealt with the degree of involvement of the General Directorate of Intelligence (D.G.I.), the Cuban equivalent of the Soviet KGB, in the infiltration of deep-cover agents into the United States, and the establishment of a vast network for the collection of intelligence of military, political, industrial, and economic nature directly affecting the security of the country.

As previously reported, the Subcommittee had followed with great interest the activities, in the United States and Cuba, of the

members and veterans of the "Venceremos" Brigade. The investigation has been a continuing one. It was begun at the time of the Brigade's inception in 1969 for the alleged purpose of helping the Communist regime of Cuba in its sugar harvest by bringing in U.S. volunteers.

There had been good reason to believe that the Venceremos Brigade had been created for the purpose of acting as a screen and tool of the Cuban intelligence apparatus. This has now been confirmed by a careful analysis of much new evidence, based on a variety of sources. (This evidence points to the conclusion that the Venceremos Brigade is one of the most extensive and dangerous infiltration operations ever undertaken by a foreign power against the United States.)

#### GENESIS

The Venceremos Brigade was brought into being through the clever manipulation of a small group of U.S. leftist radicals, prominent among whom were some of the leaders of the SDS "Weatherman" faction. The creation of the Brigade stemmed from three basic priorities of the DGI:

1. The need for factual and current information on every aspect of activity in the United States. This was deemed essential in guiding the DGI in its long range plans to infiltrate a number of Cuban "illegals" into the United States in response to pressure from the Soviets.

2. The desire of the Cubans to turn to their own advantage any manifestation of dissent toward the established order in the Free World, especially when directed against the United States. This entailed exposure of selected individuals, representing a broad spectrum of revolutionary-terrorist groups in the United States, to carefully staged meetings with leaders of international revolutionary movements brought to Cuba under the auspices of the African-Asian-Latin American Peoples Solidarity Organization, commonly known as the "Tricontinental."

3. A show of solidarity toward North Vietnam and the Viet Cong, acting not only as a conveyor belt for anti-war propaganda but actually using the Brigade as a means to collect information useful to the North Vietnamese.

#### DGI INVOLVEMENT

The involvement of the DGI in the genesis of the Brigade was so blatant that the name of one of its UN Center officers was openly mentioned in a letter to the leadership of the SDS Weatherman faction.<sup>1</sup> When active recruiting for the Brigade began in the fall of 1969, the DGI had to rely on a cadre formed mainly by New Left activists who had made one or more trips to Cuba. The results of the interviews were then reviewed by the DGI United Nations Center, which gave final approval. This procedure is still followed whenever a Brigade is being recruited.

Those selected for the Brigade undergo preliminary indoctrination at the hands of the cadre who, under the guise of assessing the involvement of the recruit, elicit information on a variety of subjects that are of great interest both to the DGI and the KGB.

Brigade members usually are transported to Cuba by passenger aircraft or converted freighter. The return trip is usually by converted cattleboat to Canada, although the 7th Brigade broke with this precedent and returned to the United States by air via Barbados. Every time a Brigade traveled to or from Cuba on a freighter, the DGI placed a number of its officers on board in order to

<sup>1</sup> Page 298, Part 4, Extent of Subversion in the New Left. (Julie Nichamin, author of the letter and one of the U.S. instruments of the DGI in the formation of the Brigade was recently in Puerto Rico as representative of the Puerto Rican Solidarity Day Committee.)



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take advantage of any situation that might allow them to manipulate and establish control over the Americans.

Venceremos Brigade activities are of such great importance to the DGI that they are controlled by a special section of the Political and Economic Intelligence Division, ranking on a par with similar sections on the UN, the U.S. Department of State, and U.S. political parties. The Brigade section is under the direct supervision of the Deputy Director of the DGI, Ramon Orozco Naveran known under the nom de guerre of "Demetrio."

Demetrio personally supervised the creation and subsequent activities of the Brigade and he assigned such priority to the project that all other DGI operations were held to be subordinate to the collection of intelligence from the members of the Venceremos Brigade.

Practically every Cuban national attached to the Brigade camps, right down to the food service and maintenance personnel, is a member or a co-opted member of the DGI. These DGI operatives are so skilled in their impersonations that few Brigade members are aware of their true identities. In fact, so many DGI personnel are needed to staff these camps that nearly all other operations must be suspended when the camps are active. Even maintenance and clerical personnel of the Directorate are pressed into service, as numerous photographs obtained by the Subcommittee indicate.

## DGI SUBSERVIENT TO KGB DIRECTIVES

However extensive the involvement of the Cuban General Directorate of Intelligence may be in this and other operations, one needs to bear in mind the underlying factor of the subservience of the DGI to its supervisory organization, the KGB (Komitet Gosudarstvennoy Bezopasnosti) of the Soviet Union.

Early in 1969, as revealed in testimony before the Subcommittee by Orlando Castro Hidaigo, a former DGI officer stationed in Paris, the Directorate issued new directives regarding relations with the Soviet Union. This stemmed from the fact that the Soviets had used oil as a blackmail weapon to bring the Cubans to heel. (Evidence of this is to be found in a lengthy philippic delivered by Raul Castro on January 24, 1968, during a secret session of the Central Committee of the Cuban Communist Party.)

Ironically, the details of the whole affair are contained in a booklet published by the Cuban government and brought to the United States by a returning member of the Brigade. The booklet is entitled "Information from the Central Committee of the Communist Party of Cuba on Microfaction Activities"—Instituto de Libro—Ediciones Politicas, Havana 1968.

As a result of a new agreement, the DGI was ordered to collect intelligence which was of little intrinsic value to Cuba but of very great interest to the Soviet Union. Immediately afterward, the number of DGI personnel stationed in Cuban embassies in Western Europe was increased sharply.

It was in this context that the KGB advisor to the DGI, Vitaliy Petrovich Semionov, insisted on the priority of establishing a good network of illegals in the United States instead of confining the Directorate's interest to the activities of the anti-Castro exiles. The DGI was eager to comply.

## CUBAN ILLEGALS IN THE UNITED STATES

At this point, it is important to go into some detail regarding the need of the Communists for factual and current information for the purpose of training "illegals" and situating them in the United States.

At the outset, the DGI infiltration candidates were handpicked members, well prepared, of long standing party allegiance, with extensive experience in intelligence matters. For better security, they had not been allowed to travel outside Cuba, and,

as an additional precaution, they had never had personal contacts with prisoners. All were college trained and virtually all of them were fluent in English. To round out their training, they were to receive an 11 month training course in the Soviet Union. The initial group of illegals consisted of approximately 30 officers selected in 1970.

In addition to the extensive training that an illegal, who is to establish residence in the United States, has to undergo, there are other needs to be considered. Most important of all is establishing a new identity with corroborating evidence as to his person, family background, education, business, etc. The period of "incubation" can take 5 or 6 years or even longer.

Soon after the Soviets made the proposal, the DGI found out that it was totally unprepared, because of a lack of the necessary data, to embark on this operation. To furnish covers for illegals entailed a monumental task of collection and analysis of information that its agents attached to the UN Center in New York could not accomplish without inside assistance.

To remedy this, Demetrio, after having observed the attitude of American left-wing visitors to Cuba, came to the conclusion that the young Americans were an easy and accessible source of the information needed. Consequently, a plan was devised and the Venceremos Brigade was brought into existence.

## THE VENCEREMOS BRIGADE IN CUBA

As stated before, the Directorate was able to obtain the information needed through a program that brought the young students into constant contact with DGI agents working under cover.

In fact, every waking moment of the Brigade members while in Cuba was supervised and controlled by the Cubans, who used physical labor to soften resistance, criticism and self-criticism sessions, minority caucuses, and rap sessions skillfully directed in order to assess the political attitude of the Americans and at the same time collect the necessary intelligence.

To this should be added the fact that the Cubans used various means such as questionnaires, diaries, recorded interviews, speeches, and others to build individual files on each member of the Brigade. Among other things, the DGI formed a committee of Brigade members for the collection and transmission to Cuba of telephone directories from a variety of areas in the United States. A telephone directory can be a simple and ready source of corroborating evidence, even in a cursory background investigation. The importance of a telephone directory in intelligence operations is such that it is a crime in Cuba to mail a telephone directory out of the country.

Another committee was formed to collect technical books on industrial research, with heavy emphasis on university departments working under a contract for the Department of Defense. Other committees were to report on the Latin community in the United States, the Cuban community in the United States, and the activities of U.S. citizens overseas. This last committee was to report the type of business, duties of embassy personnel, and other related matters.

In addition to the military-university research contracts, the DGI expressed interest in the University structure as related to its connections with the government and private corporations. Even the financial aspects of the contracts appeared to be of interest to the Cubans.

A committee was formed to report on the University of California (Berkeley) research programs relating to nuclear weapons; Los Alamos proving grounds; the Lawrence lab; a new biological lab near the naval base; the research on storing of bacteria, and survival in case of plague; and other related topics.

DGI agents showed interests in information on the ABM system instruments, MIRV, and

the missile guidance systems of our Polaris submarines, the NASA Apollo program, and the NASA center near the university, a moving target indicator, a tunnel detector, and a helicopter project to be used in Vietnam.

The thoroughness of the Cubans was such that in addition to the few subjects described above, they also collected information on the Brigade members, including rumors, accusations, degree of intoxication when alcohol was served at parties, sexual relations, and other intimate data.

The Cubans were thus able not only to assemble a complete profile of a potential agent but gathered enough intelligence to satisfy both their own needs and those of their Soviet mentors.

## RECRUITMENT OF POTENTIAL AGENTS

Usually out of a 200-member Brigade, 30 to 40 individuals were thought worthy of special consideration. Of these, 4 or 5 were recruited as contacts and, if future proficiency was consistent, they were developed as agents.

The questions submitted to Brigade members about trips to Europe and the need to know about the activities of U.S. citizens overseas were based on an immediate and real need: contact with potential agents. With a false U.S. passport, the recruited agent travels to Europe and then to Cuba for a 2 to 3 month training period, and then returns to the United States by the same route.

The contact in Europe is usually made after a lapse of a year or more, and careful observation of the recruited agent by Soviet KGB agents to weed out U.S. counterintelligence agents.

Since the Cubans did not want the Brigade members to know that one of their number had been selected for a clandestine operation, it was necessary to isolate the individual for training and instructions. For short-term training, the selected Brigade member would be hospitalized and later spirited out of the hospital or, if this was not possible, kept in isolation for the length of time needed to impart the necessary instructions.

## TARGETS IN THE U.S.

There are good reasons to believe that the DGI considers Operation Venceremos a highly successful venture in practically every respect. There were serious problems, mainly in the disciplinary field, but these were offset by the wealth of information gathered and the objectives attained. The self-perpetuating structure of the Brigade is an indication that the Cubans intend to keep a tight control on the organization, especially in view of the recent moves to re-establish diplomatic relations with Cuba.

Again, it is most interesting to note that the DGI has had an extremely keen interest in the legislative and executive branches of the United States government. One of its objectives is to obtain not only information but also a base of influence.

Of paramount importance to the DGI is the influence that can be brought to bear on the matter of resuming relations by political and economic groups which favor such resumption.

In this context, the DGI, ever ready to exploit any available source to advance its objectives, has sought to enlist the help of the National Lawyers Guild to create a pressure group in the United States. A letter to members of the Washington, D.C., chapter announcing the names of the selected delegates for a trip to Cuba contained the following statement:

"The recommending committee was overwhelmed by the number of qualified and desirable applicants. The process used to select the delegates and alternates was difficult, and of course subjective to some degree. The first criterion was determined by the Cubans themselves. They asked that the Guild send men and women who would be able to serve

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them as contact and resource people in Washington during the upcoming period of transition in Cuban-U.S. relations; they desired a delegation which would have a broad background in governmental, professional and legal work. They (sic) Cubans stressed that the delegates should have a solid history of professional experience in the legal field, which is the reason why the selection was weighted towards lawyers rather than legal workers or students."

The letter closed with the word "Venceremos."

## CONCLUSION

As the 8th contingent of the Venceremos Brigade prepares to leave for Cuba sometime in March of 1975, the number of veteran Brigade members who came under DGI control totals nearly 2,000. Although many of the members have dropped out completely, there is enough overt activity in the United States to indicate that the National and Regional Committees are determined to have a hand in directing the movement for "political and social change."

In Marxist jargon "political and social change" is a euphemism for revolution. The veterans of the Brigade left no doubt as to their intentions when they printed a leaflet in California to recruit new members. It stated:

"We call ourselves Venceremos Brigade. Senator Eastland calls us 'Human Missiles' because the message we bring with us is a call for solidarity among all the people who are fighting the common enemy: U.S. Imperialism."

"The struggle in the Cuban cane fields, on the front lines in Vietnam, in the world communities at home and against the war machine in our country is the same."

In view of the inherent danger to the security of the United States engendered by the activities of the "Venceremos Brigade" and its mentor and director, the Cuban General Directorate of Intelligence, the staff of the Subcommittee is in the process of preparing a comprehensive report on the Brigade to be released in the near future.

In the course of the subcommittee's investigative activities, liaison was maintained with Federal, State, and local law enforcement agencies, including staff attendance at monthly meetings, annual conferences, and seminars.

Mr. STONE. This report clearly outlines that the Venceremos Brigade is trained, schooled, and led by the Cuban Secret Intelligence Service and poses in the words of the subcommittee, the following threat:

This evidence points to the conclusion that the Venceremos Brigade is one of the most extensive and dangerous infiltration operations ever undertaken by a foreign power against the United States.

The PRESIDING OFFICER. The Senator's 15 minutes have expired.

Mr. MOSS. Mr. President, I have the next order. I will be happy to yield the Senator 3 or 4 minutes.

Mr. STONE. Three minutes will be fine.

Mr. MOSS. I yield 3 minutes to the Senator from Florida.

Mr. STONE. I thank the Senator, and I will conclude within 3 minutes.

There are two ways that the Department of State can proceed with indirect assistance to the lifting of the sanctions against Cuba in the OAS meeting that will take place in Washington next month.

One way is to amend the rules so that the parliamentary council of the OAS

can end boycotts by a majority vote, and that procedure does not require submission to this body. The other way is to change the rules of the Rio Treaty and the rules of the OAS itself, a straightforward way, and that would require the advice and consent of the Senate.

I urge, first, that no action be taken unilaterally by this country to recognize a regime that has expropriated more than \$1.5 billion of American property without at least submitting that major change in policy to the U.S. Senate for its advice and consent; and second, that we not change the policy of the OAS through the back door, but that if support is given directly or indirectly, it be done by a change in the Rio Treaty rules, which the Senate would then have the ability to debate, and I hope would extendedly debate, and either advise and consent or not consent.

Mr. President, I ask unanimous consent that certain correspondence and a document in question and answer form entitled "Specific Questions—Responses," be printed in the RECORD.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

MARCH 26, 1975.

Mr. HARRY W. SHLAUDEMAN,  
Deputy Assistant Secretary,  
Department of State, Washington, D.C.

DEAR MR. SHLAUDEMAN: I sincerely appreciate the briefing you provided me in the Lincoln Room last week. In accordance with our agreement, I am writing you so that you can provide me written non-confidential answers.

1. What evidence does the State Department have that the Castro regime has changed its policy toward training and exporting of insurgents, saboteurs, and provocateurs in this hemisphere?

2. What evidence that the Castro regime has ceased forming or training the so-called "Venceremos" groups which the Castro regime has periodically previously trained in the fermenting of civil disorder in the hemisphere?

3. What are your best estimates of the numbers of political prisoners and their conditions within Cuba including also the forced labor groups used both on the farms and for other forced labor.

4. Has the Cuban government agreed or does it now agree to admit international organizations such as Red Cross or world associations of judges, lawyers, etc., to inspect conditions in the political prisons and forced labor camps?

5. What conditions does the Cuban government now impose upon hijackers?

6. Has the Soviet Russian involvement in everyday management of Cuban affairs increased or decreased in recent years?

7. Do Soviet submarines regularly call at Cuban ports and are facilities available for them to be re-supplied and otherwise maintained there?

8. What evidence does the Department of State possess that the Cuban regime, either itself or in combination with Soviet Russia, has no nuclear military capabilities on the islands of Cuba?

Apart from these specific questions, the discussion we had last week centered around one basic question which is, were the United States to (a) recognize Cuba diplomatically or (b) concede directly or indirectly to the lifting of the economic embargo against the Castro regime, what benefits would accrue to the United States?

I would appreciate your response to this in writing, touching on the bilateral relationships we would then have with Cuba and with other member nations of the OAS.

Procedurally, we discussed the forthcoming meeting of the OAS in Washington in May and the fact that the embargo resolution against the Castro regime provides that the embargo may be lifted only by a vote of  $\frac{2}{3}$  of the OAS members. This means, therefore, that apart from such a  $\frac{2}{3}$  vote there are only two other ways that the embargo resolution may officially be terminated. One is by a  $\frac{2}{3}$  vote to change the Resolution itself so the embargo could be lifted by a majority vote. As you explained, this can be done without resort to Congress. The other is to amend the Rio Treaty, to allow for a rules change by a majority vote. That would require the advice and consent of the U.S. Senate.

In other words, the Executive Branch can either vote to end the embargo without resorting to the advice and consent of the Senate, or it can conduct itself so that Senate consent would be required. Therefore, would you confirm or clarify these points in your response, and if possible give the State Department's position as to what it might do or, if possible, what it has decided to do.

I do appreciate your kindness in briefing me last week and request that your answer be as prompt as possible in the light of the urgent interest expressed in these points by so many Americans.

Sincerely yours,

RICHARD "DICK" STONE.

WASHINGTON, D.C.

HON. RICHARD "DICK" STONE,  
U.S. Senate,  
Washington, D.C.

DEAR SENATOR STONE: Thank you for your letter of March 26 addressed to Mr. Harry W. Shlaudeman.

I am attaching responses to the eight specific questions you posed as well as on the broad query on possible benefits to the United States from reestablishment of diplomatic relations with Cuba and termination of our economic denial program and a response to your question regarding OAS sanctions against Cuba.

I hope that this information will be helpful to you.

Sincerely,

KEMPTON B. JENKINS,  
Acting Assistant Secretary for Congressional Relations.

## SPECIFIC QUESTIONS—RESPONSES

1. Q. What evidence does the State Department have that the Castro regime has changed its policy toward training and exporting of insurgents, saboteurs, and provocateurs in this hemisphere?

A. Steps to re-establish diplomatic relations with Cuba by several Latin American countries suggest that such countries have concluded that the Cuban Government is not interfering in their internal affairs. Since 1972, Peru, Argentina, Panama, Venezuela, Colombia, Trinidad and Tobago, Bahamas, Guyana, Jamaica and Barbados have taken this action. In addition to the first six of these countries, which are parties to the Rio Treaty, Costa Rica, the Dominican Republic, Mexico, Honduras, Ecuador and El Salvador in November, 1974 voted to lift those sanctions against Cuba imposed in 1964 by the OAS as a result of Cuban intervention in Venezuela.

Although a majority of the Latin American and Caribbean countries evidently no longer regard themselves threatened by Cuba, a number of other countries do regard Cuba as threatening their internal security. The US itself does not feel threatened by Cuba. The important question for us is how the question is perceived by Cuba's neighbors in the Hemisphere. U.S. policy takes these differences of perception into account and helps to explain why the U.S. abstained on the vote to lift OAS sanctions at the meeting of For-

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sign Ministers in Quito in November, 1974. At that time, the U.S. Representative, Deputy Secretary Robert S. Ingersoll, stated:

"If this Meeting of Consultation has not produced a conclusive result, it has at least aired in a constructive way the fact that there is no easy solution to the problem of a country which deals with some on the basis of hostility, and with others on the basis of a more natural relationship.

"I should add that the United States looks forward to the day when the Cuban issue is no longer a divisive issue for us. Cuba has absorbed far too much of our attention in recent years. We need to turn our energies to the more important questions. We must not let a failure of agreement on the Cuban issue, at this time, obscure our common interest in working together toward mutually beneficial relationships on the major issues of this decade."

2. Q. What evidence that the Castro regime has ceased forming or training the so-called "Venceremos" groups which the Castro regime has periodically previously trained in the fomenting of civil disorder in the Hemisphere?

A. The "Venceremos" groups are so far as we know, those groups of American citizens, mostly students, who have gone to Cuba, without passport validation for travel to Cuba, to participate in the sugar harvest or more recently to take part in development activities. Calling themselves the "Venceremos Brigade," the eighth such group composed of approximately 150 persons went to Cuba in March, 1975. It is believed that about 2,000 U.S. citizens have gone to Cuba since 1969 in these "Brigades". The Venceremos Brigade was formed in June, 1969 in cooperation with the Cuban Government whose officials screen applicants. Its headquarters are located in New York City. We cannot affirm or deny that the "Venceremos" groups have engaged in activities in Cuba other than harvesting sugar or taking part in development activities. But the number of U.S. Citizens involved is not large.

3. Q. What are your best estimates of the numbers of political prisoners and their conditions within Cuba including also the forced labor groups used both on the farms and for other forced labor.

A. Prime Minister Castro reportedly admitted to 20,000 political prisoners in 1963 (Castro's Cuba, Cuba's Fidel, by Lee Lockwood.) In his October, 1974 interview with CBS Television, Mr. Castro said that 80% of political prisoners had been released. These are the only public references by Cuban leaders that have come to our attention. Observers who have attempted to reach an estimate place the number of prisoners in the thousands, but we have no definitive figure. If the numbers are unclear, what is certain is that there continue to be political prisoners incarcerated in Cuba.

Hard information on forced labor is also unavailable. Military Units for Aid to Production (UMAP), which established forced labor camps in 1965 for clergymen, common criminals, vagrants and others whom the Cuban Government considered social undesirables, was discontinued in 1968. A degree of coercion or social pressure is undoubtedly involved in the Youth Labor Army, a militarized work force of about 100,000 people. The same probably applies to some members of the "Micro-brigades" employed after completion of normal work duties in the construction industry, particularly in the housing sector. The large scale forced labor camps associated with the UMAP have mostly disappeared but camps persist in rural areas where persons convicted of political and other charges are incarcerated instead of regular prisons. It is our understanding that most of these camps are viewed as "rehabilitation" centers and inmates receive some compensation and are permitted conjugal visits.

4. Q. Has the Cuban Government agreed or does it now agree to admit international organizations such as Red Cross or world associations of judges, lawyers, etc., to inspect conditions in the political prisons and forced labor camps?

A. No.

5. Q. What conditions does the Cuban Government now impose upon hijackers?

A. Since the February 15, 1973 U.S.-Cuban Memorandum of Understanding on Hijacking of Aircraft and Vessels and Other Offenses only one hijacking of a U.S. aircraft has occurred. This incident on December 14, 1974 involved a Piper Seneca aircraft of the Tampa Flying Service whose pilot was forced by a lone man to fly to Havana. The aircraft and pilot were returned to the U.S. on December 17. In reply to our inquiries concerning the hijacker and Cuban intentions with respect to him, Cuban authorities have told us the hijacking case is still under investigation.

There are believed to be approximately 35 other persons who hijacked aircraft prior to the Memorandum still in Cuba. Several have returned to the U.S. over the years and yet others have indicated a desire to return. Cuban authorities generally permit such return at the hijacker's behest—not at a USG request.

6. Q. Has the Soviet Russian involvement in everyday management of Cuban affairs increased or decreased in recent years?

A. Several thousand Russian technicians working in both the civil and military sectors are believed to be in Cuba. In view of the predominant role of the U.S.S.R. in Cuban foreign trade and as the principal supplier of military hardware, the presence of these personnel is not in itself surprising. There is no evidence that Russian advisors control everyday management of the Cuban Government, its economy or its military services. In recent years, particularly since 1970, Cuban economic policies have moved increasingly towards the Soviet model. In 1972 Cuba joined CEMA, the Soviet sponsored economic association of Communist countries. Relations with the Soviet Union have generally intensified during this period which included the Cuban visit of General Secretary Brezhnev in 1974.

7. Q. Do Soviet submarines regularly call at Cuban ports and are facilities available for them to be re-supplied and otherwise maintained there?

A. There have been 13 Soviet naval visits to Cuba since 1969. Soviet submarines have taken part in such visits. The Soviet naval support facility at Cienfuegos remains operational with only a tender required to provide forward servicing to Soviet naval units. Soviet naval visits have been the subject of hearings before the Subcommittee on Inter-American Affairs, Committee on Foreign Affairs for the past several years. The last published Committee report is attached. (The report of November, 1974 hearings will be published in the very near future.)

8. Q. What evidence does the Department of State possess that the Cuban regime, either itself or in combination with Soviet Russia, has no nuclear military capabilities on the islands of Cuba?

A. DIA officials testified on November 21, 1974 before the Fascell subcommittee as follows: "Mr. Fascell: Are there any Soviet or other nuclear weapons in Cuba? Mr. Maliner: No sir. We do not believe there are.—We look at all other sources that are available to us to confirm or deny and so far they have all been denied."

## BILATERAL RELATIONS

You also asked what benefits might accrue to the United States in the following hypothetical situations: diplomatic relations were re-established and the economic embargo policy was ended.

As you know, Secretary Kissinger has stated that we see no virtue in perpetual antagonism between Cuba and the United States. He also stated if the OAS sanctions are lifted that the US would consider what its own best interests were regarding bilateral relations but that fundamental change cannot come unless "Cuba demonstrates a readiness to assume the mutuality of obligation and regard upon which a new relationship must be founded." Therefore, the two hypotheses you put forward are unlikely to occur without some action on Cuba's part.

## OAS SANCTIONS

Article 17 of the Rio Treaty provides that "decisions" of the Foreign Ministers (the "Organ of Consultation" in treaty terminology) must be taken by two-thirds vote. Thus, when the Foreign Ministers, acting under the Rio Treaty, imposed sanctions against the Cuban regime in 1964, the Foreign Ministers took their decision by two-thirds vote.

At Quito a resolution was introduced to lift the sanctions against Cuba. It received the support of majority of the Foreign Ministers, but failed passage because it did not reach the two-thirds required by Article 17. However, in establishing the sanctions against the Dominican Republic and against Cuba, the Foreign Ministers established another avenue for lifting sanctions, by delegating that power to the Permanent Council of the OAS. And it was the Permanent Council which lifted the sanctions against the Dominican Republic in 1964 by a unanimous vote. Inasmuch as the Permanent Council normally takes its decision by majority vote, the Foreign Ministers had to specifically mandate in the two cases that the Permanent Council use the 2/3 rule.

As far as amendment of the treaty is concerned, the OAS Special Committee has labored for over a year to produce a set of recommended reforms to the Rio Treaty—a draft Protocol of Amendment. The United States through its duly instructed representative to the Organization of American States has supported this package of reforms with one exception, having to do with a proposed article about a treaty of collective economic security. One reform, which received unanimous support, would amend the Rio Treaty voting provision in Article 17 to provide for lifting sanctions by majority vote, while retaining the two-thirds requirement for imposing them.

We, along with all other members of the OAS, supported the voting provision reform on the common sense ground that while an extraordinary majority of two-thirds was necessary to impose extraordinary measures, it was not reasonable to permit these same measures to be retained by a minority. Additionally, the history of the Cuban sanctions shows that when such extraordinary measures lose widespread support, they also cease to be effective and begin to damage the fabric of the treaty itself.

As you pointed out this Protocol of Amendment when it is finally refined and signed by the member states, cannot go into effect until the ratification process is completed, which for the United States requires the advice and consent of the Senate. When the Protocol is completed and the U.S. has signed it, the Executive branch will follow, as it must the prescribed constitutional procedures and submit the Protocol of Amendment to the Senate.

In the meantime, however, as Secretary Kissinger noted in his Houston speech, several Latin American countries have suggested that a way be found to apply the principle of majority rule to the existing Cuban sanctions. As we understand this idea, this would require a decision of the foreign ministers (always by two-thirds vote) to amend the delegation of authority to the Permanent Council in the original sanctions resolution to provide that the



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Council may now lift sanctions by majority vote.

In our view this would be legal and consistent with Council voting procedures. The real question is whether there is a political will in the hemisphere to approach the issue in this way. As the Secretary said at Houston, he would be consulting with his Latin American colleagues "with the attitude of finding a generally acceptable solution." We cannot predict the outcome of these consultations, nor would it be prudent to speculate on the attitude the United States representatives will take should this question arise at the May meeting of the General Assembly of the OAS.

Mr. STONE. I thank the Senator from Utah for yielding me additional time.

Mr. HELMS. Mr. President, will the Senator yield?

Mr. STONE. I yield.

Mr. HELMS. I commend the distinguished Senator from Florida on his statement, and I wish to say that it is with pride that I join him in the co-sponsorship of his resolution.

Mr. STONE. I thank the Senator from North Carolina.

The PRESIDING OFFICER. Under the previous order, the Senator from Utah (Mr. Moss) is now recognized for not to exceed 15 minutes.

#### HYDROGEN: PRESENT THREAT— FUTURE PROMISE

Mr. MOSS. Mr. President, I shall speak today about energy, which now occupies so much of our attention, and particularly hydrogen as a source of fuel and for other uses.

Today the United States uses enormous quantities of hydrogen as an intermediate step in the agricultural industry, the petrochemical industry and many others. The problem is that we are now faced with the probability of significantly increased costs and even shortages of hydrogen in the future. Undoubtedly, this will be reflected in the prices of agricultural and petrochemical products. Thus we have a real incentive right now to develop new sources of hydrogen. This time we can avoid being caught unprepared as we were in the oil crisis.

Furthermore, scientists have been telling us that hydrogen is an ideal nonpolluting fuel for the future. It seems apparent that we must find new sources of hydrogen. Moreover, we should develop these new sources with a capacity to meet not only current industrial needs but also to support future energy systems.

My remarks will hopefully provide evidence that hydrogen has a place in our future energy picture. They will be neither technical nor exhaustive. Rather, they are the observations of a legislator who is concerned about our economy and, in particular, about the escalating price of food and energy.

There are three important considerations concerning hydrogen: How we get it, how we store and ship it, and how we use it.

First consider where we get hydrogen. It seems surprising that this is any problem at all. After all, it is estimated that 90 percent of all of the atoms in the uni-

verse are hydrogen. Here on Earth water covers almost three-quarters of the Earth's surface and water is one-ninth hydrogen by weight. Hydrogen compounds are contained in the greater part of all plant and animal tissue. The problem is hydrogen is so chemically active that we nearly always find it tied up in other compounds. When it does appear in a free state, being the lightest of all gases, it is quickly dissipated.

There has been some futuristic talk about a hydrogen economy in which we greatly increase the uses and availability of hydrogen. In the hydrogen economy, hydrogen would replace petroleum for most of our energy needs.

However, we already produce huge quantities of hydrogen. Even more interesting, it is currently produced from natural gas and light fractions of petroleum. Yet those are the fuels some claim hydrogen should replace. Thus the cost of processes using hydrogen is tied to the price of natural gas and petroleum. Most of this hydrogen is used as an intermediate step in producing fertilizer, petrochemicals, and other products.

Water would surely be an attractive source for hydrogen. It is for all practical purposes infinitely abundant. Even if we consume water to generate hydrogen, the product of combustion of hydrogen is again, water. Hydrogen can be produced from water in a variety of ways. One method that seems promising for the future has been known since the discovery of hydrogen. That is simply the electrolysis of water. The reason that process seems to be so important for the future is that it is an easy way to store energy from intermittent power sources. Energy sources like wind power and solar power have been regarded as impractical because of their variable and unpredictable output. But if they produce electricity which produces hydrogen, the hydrogen can be stored and used on demand.

This same approach may provide a means of getting energy most efficiently from nuclear and hydroelectric powerplants. When demand is low at such powerplants, the excess capacity could be used to produce hydrogen. Fuel cells, which I will mention in more detail later, could then be used to produce electricity during peak periods. Thus, the production of hydrogen can be much like charging a battery. Systems with excess capacity or intermittent operation can charge our "hydrogen battery" which provides power on demand. Hydrogen thus seems to be a way of using some of our most promising nonpolluting, nondepleting sources of energy in the future.

For the nearer term and while we develop the sources of hydrogen previously discussed, hydrogen could be made by a process which uses coal. We should put a high priority on the development of a commercially competitive process for providing hydrogen from this source. It appears that the technology is far enough along to enable us to do this. The success of such a process could be important in holding down the price of food and other commodities, while assuring that such production is independent of economic measures levied against us by other countries.

The second question is how to transport and store hydrogen. This tends to be quite a problem because hydrogen has a high leakage rate relative to other gases. The extremely small size of the hydrogen molecule enables it to escape through the tiniest openings in containers or pipelines. In fact, the experts say its molecule is so small it can escape through the molecular structure of most materials. To make matters worse, over a period of time hydrogen may make its containers or pipelines brittle, thus necessitating periodic replacement. Another problem is that the temperature needed to liquify it and keep it that way is extremely low. Thus it is very difficult to transport and use as a liquid. As a gas it occupies a large volume and is hard to store. Probably none of these problems is insurmountable, however. For instance, the space program developed techniques for the transport and storage of liquid hydrogen. This has given us important experience as we begin to use hydrogen in more energy processes.

From a commercial standpoint it may be desirable to produce hydrogen at the point of consumption and in the quantity needed. Devices called reformers are used commercially and have been developed in connection with fuel cells. These devices, even in small units, can efficiently convert natural gas to hydrogen and carbon dioxide. Moreover, they also produce the hydrogen on demand. Similar devices which produce hydrogen on demand from a variety of other fuels are under development. They are attractive because they avoid much of the problem of storing and transporting hydrogen.

The concept of producing needed hydrogen on demand at the point of use is employed in a NASA project for an automobile engine. A small device added to the car catalytically cracks a little gasoline to produce a hydrogen rich gas and this is injected along with the regular flow of gasoline into the engine. Because gasoline is used as a source of hydrogen generated right under the hood, the problem of storing hydrogen is neatly avoided. NASA ran some tests on a Chevrolet using bottled hydrogen to simulate the gas generator. The engineers took all the engine-related emission control gadgets off the car, put their system on the car, and went out for a spin on the EPA Federal driving cycle. They got 25 percent better gas mileage. But even so, the emissions from the test car met the stringent 1978 standards for nitrous oxide. A catalytic converter was used to meet the hydrocarbon and carbon monoxide standards.

Other scientists have tried using hydrogen alone, instead of gasoline, in an automobile engine. It turns out that the really tough problem is storing the hydrogen. But there appears to be a new and potentially attractive approach to this problem—the metal hydride storage system. Scientists discovered that chemical components called metal hydrides absorb hydrogen and release it if moderately heated. The astounding part of it all is that a given volume of metal hydrides can store more hydrogen gas than is contained in the same volume of liquid

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hydrogen. Thus it is now possible to store hydrogen at the densities of a liquid, but without the low temperatures and high pressures which would otherwise be needed. So metal hydrides may be the means by which future ground transportation such as cars, trucks, and trains might use hydrogen as a fuel. This approach is already being demonstrated by a Utah firm, Billings Energy Research Corp. Equally important, this technique has great promise for enabling utilities to store excess energy in the form of hydrogen where weight is not a problem.

That brings me to the real payoff: how we will use hydrogen. It appears that fertilizer production will continue to be a major and growing user of hydrogen. It, no doubt, is a key ingredient in increasing the world's food supply. Petrochemicals will probably also continue to play a major role in our economy and this industry will continue to use large quantities of hydrogen for a number of years.

Besides the chemical applications of hydrogen, there is its use as a power source. In this regard it appears that the fuel cell holds great promise for the conversion of hydrogen to electricity.

According to NASA's reports, the fuel cell is an extremely efficient, environmentally wholesome generator of electricity. Instead of using combustion to produce heat to create steam which spins a generator, the fuel cell involves a chemical reaction of the hydrogen with air to produce electricity directly. The intermediate mechanical processes are eliminated. In fact, the basic fuel cell has no moving parts. It is like a battery that never runs down, as long as you feed it air and hydrogen.

The truly unique quality of this device is that even very small units are extremely efficient.

Consequently, we do not have to build enormous fuel cells to obtain acceptable levels of efficiency. In contrast it is reported that the best steam and gas turbine generators operate at a thermal efficiency of about 39 percent, but such efficiency is achieved only if the plant produces power levels of over 100 million watts.

The best fuel cells in existence are only slightly more efficient than steam and gas turbine generators, but that efficiency is achieved at a power output of 1 kilowatt or less, a power level at which other systems are far less efficient. Advanced high temperature fuel cell designs that theoretically would operate at 60 percent efficiency are now under study.

Furthermore, that efficiency remains roughly constant over a variety of load situations, whereas conventional systems drop in efficiency if operated at less than maximum capacity. The fuel cell responds automatically and very rapidly to changing loads. Conventional systems are simply not that flexible and adaptive.

Because fuel cells can be small yet highly efficient, they can be dispersed right into the community so that electrical transmission losses are minimized. Existing gas lines can carry the fuel right to these dispersed fuel cells. Last, the waste heat of the fuel cell can be used to

heat nearby buildings, thus gaining an even higher overall efficiency.

Because of its battery-like nature, the fuel cell can be built with modular construction so that incremental growth or repair is possible without a shutdown of the plant. Compact size also means that siting problems are reduced for utilities that have found the community's welcome mat rolled up.

The fuel cell creates little, if any, air, water, or noise pollution and so it is environmentally ideal. Waste heat is ejected into the air. Having no moving parts except perhaps cooling fans, its noise level is comparable to that of nighttime residential areas. The fuel cell's benign environmental characteristics would make it extremely attractive to utilities facing tough emissions control requirements.

In sum, the fuel cell appears to be well suited to an economy gradually committing itself to the utilization of hydrogen.

Gaseous hydrogen has many of the advantages of natural gas. It can be handled like natural gas and burns even cleaner than natural gas. There are problems with hydrogen but its use as a replacement for natural gas will probably be determined by economics rather than by any technological drawbacks.

For aircraft it appears hydrogen has many attractions. It has more than double the energy per pound of fuel than current jet fuel. That fact alone explains why our advanced rocket engines use liquid hydrogen and oxygen as fuel. It burns with only one pollutant—water vapor. Hydrogen aircraft engines have already been demonstrated. Preliminary studies of such engines indicate increased range or payloads. The impact on aircraft design, because of storage problems, however, indicates that it may be quite a while before such aircraft are flying.

For automobiles the potential use of hydrogen is intriguing. I have previously mentioned the NASA project in which hydrogen is produced from gasoline in the engine as it is needed and then introduced into the engine along with the gasoline. Also, I have mentioned the very promising Utah project, in which a vehicle using hydrogen instead of gasoline has been successfully driven many miles.

In closing, several points should be emphasized.

First, we are already committed to the production of large quantities of hydrogen. This is currently produced from natural gas and petroleum, our most scarce and precious fuels.

Second, finding new commercially viable sources of hydrogen is important to protect the production and price of fertilizer and other hydrogen-dependent products. New hydrogen sources are also important, because of its potential uses in energy processes.

Third, if we come up with means of economically producing excess hydrogen over current needs, many new energy processes, now considered too unreliable, will develop and greatly improve our energy situation.

Mr. President, I yield the floor.

## ORDER OF BUSINESS

The PRESIDING OFFICER. Under the previous order, the Senator from California (Mr. TUNNEY) is recognized for not to exceed 13 minutes.

(The remarks made by Mr. TUNNEY at this point are printed elsewhere in the Record under Submission of a Resolution.)

The PRESIDING OFFICER. Under the previous order, the Senator from Michigan (Mr. GRIFFIN) is recognized for not to exceed 15 minutes.

Mr. HELMS. Mr. President, on behalf of the distinguished assistant minority leader, I yield back his time.

## ROUTINE MORNING BUSINESS

The PRESIDING OFFICER. Under the previous order, there will now be a period for the transaction of routine morning business, not to exceed 15 minutes, with statements therein limited to 5 minutes each.

## ORDER FOR ADJOURNMENT

Mr. ROBERT C. BYRD, Mr. President, I ask unanimous consent that when the Senate completes its business today, it stand in adjournment until 12 o'clock noon tomorrow.

The PRESIDING OFFICER. Without objection, it is so ordered.

## ORDER FOR TRANSACTION OF ROUTINE MORNING BUSINESS TOMORROW

Mr. ROBERT C. BYRD, Mr. President, I ask unanimous consent that after the two leaders or their designees have been recognized under the standing order tomorrow, there be a period for the transaction of routine morning business, of not to exceed 15 minutes, with statements therein limited to 5 minutes each.

The PRESIDING OFFICER. Without objection, it is so ordered.

## PROTOCOL FOR THE CONTINUATION IN FORCE OF THE INTERNATIONAL COFFEE AGREEMENT OF 1968, AS EXTENDED

Mr. ROBERT C. BYRD, Mr. President, as in executive session, I ask unanimous consent that the injunction of secrecy be removed from the Protocol for the Continuation in Force of the International Coffee Agreement of 1968, as Extended—Executive B, 94th Congress, first session—transmitted to the Senate yesterday by the President of the United States. I also ask unanimous consent that the protocol with accompanying papers be referred to the Committee on Foreign Relations and ordered to be printed, and that the President's message be printed in the Record.

The PRESIDING OFFICER (Mr. HASKELL). Without objection, it is so ordered.

The message from the President of the United States is as follows:

To the Senate of the United States:

I am transmitting herewith, for the advice and consent of the Senate to ac-